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FROM: Mayada Logue

SUBJECT: Report on IAQ Symposium

DATE: May 23, 1994

A symposium: "Resolving the Ambiguities, An Industrial Hygiene IAQ Symposium" was held yesterday in Anaheim, California. To most of the 400 symposium attendees, the ambiguities have not been resolved but rather reinforced. Following are highlights from some of the speakers:

1. Dr. Henry Trochimowicz, Toxicologist, E.I. du Pont de Nemurs & Co., "TLVs and WEELs--Usefulness in IAQ: Dr. Trochimowicz gave a brief history of the development of Threshold Limit Value (TLV), Workplace Environmental Exposure Level (WEEL) and Permissible Exposure Limit (PEL) as "safe levels" to control occupational risks. In general, these guidelines apply to healthy working adults for a daily 8-hour time-weighted average exposure and a 40-hour work week for a working lifetime. The question most often asked by industrial hygienists recently has been: can occupational limits like TLVs and WEELs be used to derive ambient guidance levels for use in IAQ evaluations? Currently, 1/10 of TLVs and WEELs are used by many industrial hygienists for IAQ evaluations, but those levels are not based on toxicological data and, rarely do the measurements in the indoor environment ever reach the 1/10 level. Dr. Trochimowicz concluded that current TLVs and WEELs are an appropriate starting point for setting IAQ limits and also recommended that EPA Ambient air standards and WHO standards also be considered. Questions concerning the problems of a dual standard, one for occupational exposures and one for "white-collar workers", from the audience were not adequately addressed by the speaker.

2. Professor Marco Marconi, Institute of Medicine at the University of Milan, Milan, Italy: "NATO's Efforts to Set IAQ Standards": Professor Marconi described in detail the "NATO Pilot Study on Indoor Air Quality". This study began in 1988 and included both policy and research objectives.

Policy Objectives:

- ..to develop a network of the agencies, institutions, and individuals responsible for establishing policy and regulation IAQ issues;
- ..to examine policy strategies and propose a range of options that could be adopted by NATO nations

Research Objectives:

- ..identify current research efforts and develop a registry of research contacts;
- ..to characterize indoor air quality problems in NATO countries;
- ..to identify priority problems;
- ..to identify, study and recommend mitigation or control methods

The final recommendations include the development of a Standard/Protocol to include:

- ..exposure guidelines for indoor air quality (to include non-cancer end points)
- ..building codes
- ..consensus ventilation standards
- ..maintenance protocols
- ..product labeling
- ..accreditation
- ..product emission standards (three working groups have been formed: in Europe, Canada and USEPA)

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When discussing the management of pollutant sources, Professor Marconi stated that unlike the US, ETS is still a major pollutant source in Europe. Professor Marconi stated that the complete report is currently being published by the US EPA.

Dr. Anthony Pickering, Manchester, England: "The Relationship of Indoor Air Quality to the Development of Respiratory Allergy and Chemical Hypersensitivity": Dr. Pickering discussed the increasing prevalence, morbidity and mortality of bronchial asthma in Western Europe and suggested possible reasons for this increase based on recent research:

1. Outdoor air pollution appears to be exacerbating existing airways disease rather than actually initiating the disease.
2. Indoor air in the home constitute more than 50% of the bodies lifetime weight of inhaled and ingested materials.
- 3 There is a significant association between mite sensitivity and exposure to high concentrations of mite allergen during the first year of life and the development of asthma by he age of 11.
4. Exposure to dust mites, cockroaches, cat and dog allergens, grass pollen and ETS during the first year of life may lead to antibody formation and asthma.
5. The design of modern domestic dwellings (tighter) is likely to have increased the intensity of allergen exposure in the home due to decreased air exchange rates.
6. Data on the impact of VOC exposure on SBS is currently inconclusive.
7. The role of mold exposure in domestic dwellings and the development of allergic lung disease is less certain.

Dr. Pickering clearly believes cat allergens are a major source of antibody formation and asthma and, because they are very small particles, less than 2.5 microns, they are easily transported into office buildings on clothes and are very difficult to remove.

Dr. William Cain, Fellow at the John B. Pierce Foundation Laboratory, "Odors and Irritation": Dr. Cain stated that the number one and two complaints in the indoor environment are temperature and odor. He described his research and stated that an analytical method for determining offensive odor needs to be developed. He suggested that a gas chromatographic liquid/solid phase will be developed within the next year to be able to fingerprint unpleasant odors in a space which will than lead to a prediction of irritation. His research indicates that mixtures have a lower threshold of irritation than the pure chemicals. He discussed the decipol. His initial reaction was positive, but he now believes that expert panels cannot be used to access odor annoyances. In private conversation with Dr. Cain, he told me that he believed that 99% of building complaints can be corrected by proper HVAC operation and maintenance.

Dr. Alan Hedge, Cornell University, "Psychological Aspects of Sick Building Syndrome": Dr. Hedge spoke about his research which included both smoking and non-smoking buildings. His research indicates that thermal dissatisfaction is the major source of complaints and often building occupants confuse thermal discomfort with health impacts. Occupants are directly impacted by vision, smell and temperature and are often times unable to distinguish between those senses. In addition, Dr. Hedge's research demonstrates that attention, awareness, and decision processes bias perception, and show that stress strongly impacts symptom reporting.

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Dr. Michael Hodson, University of Connecticut Health Center, "IAQ Questionnaires":
The presentation was an overview of prior questionnaire surveys and presented data from comparisons of specific questions. Dr. Hodgson noted that investigations should be careful in the use of questionnaires and be sensitive to the fact that they may have their own bias and the act of using them in a building investigation may introduce an additional bias.

Hal Levin, "ASHRAE's Efforts on IAQ Standards--62-1989 Update": Mr. Levin stated that the current standard which is based on thermal comfort will be modified to address chemical load as well. He stated that the new standard will concentrate on source control and credit will be given for filtration and a penalty will be charged for high sources. He stated that issues still to be resolved are:

....a fundamental lack of data on health effects to low level exposure

....code language vs. informative and descriptive language

....compliance

....relative to ETS, Mr. Levin said there is only one solution: "Ban it"

He went on to say that the feeling on the committee is that source control is better than dilution ventilation. (Note: at the ASHRAE 62 meeting I attended in Atlanta, the majority of committee members felt it was not appropriate for the ASHRAE standard to take a position on smoking policy.)

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